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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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CONNOLLY BOVE LODGE & HUTZ LLP
1875 EYE STREET, N.W.
SUITE 1100
WASHINGTON, DC 20006

EXAMINER	
ANDERSON, DENISE R	

ART UNIT	PAPER NUMBER
1797	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/579,989	LANGLAIS, CHRYSTELLE	
	Examiner	Art Unit	
	Denise R. Anderson	1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 May 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9* is/are rejected.

7)☒ Claim(s) *6* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *19 May 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *19 May 2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement filed May 19, 2006 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each cited foreign patent document; each non-patent literature publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file. Normally such documents are not considered but the examiner secured a copy of each of the missing foreign patent documents and included them in the references cited by the examiner.

Claim Objections

2. Claim 6 is objected to because of the following informality: It appears that the word "to" in line 3 should be "from." Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 3 and 7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Regarding claim 3, the phrase "preferably" renders the claim indefinite because it is unclear whether the limitation(s) following the phrase are part of the claimed invention. Regarding claim 7, the phrase "particularly" renders the claim indefinite because it is

unclear whether the limitation(s) following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. Claims 1-4, 6, and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yasuda (JP5068993A, Mar. 23, 1993), in further view of Langlais (WO010141906A1, Jun. 14, 2001 – US 6974544B1 will be cited) for the specifics of the zeta potential measurement.

8. Claims 5, 7, and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yasuda (JP5068993A, Mar. 23, 1993), in view of Langlais (WO010141906A1, Jun. 14, 2001 – US 6974544B1 will be cited) for the specifics of the zeta potential measurement, in further view of Krulik et al. (U.S. Patent Pub. No. 2002/0113023, Aug. 22, 2002) for pH adjustment and mixtures of coagulating reagents.

9. The patentability analysis will begin with claim 1. In Figure 1, Yasuda discloses "purifying tank sludge" where "tank sludge 1 and a flocculent 2 are mixed in a chemical mixing tank 3 to flocculate and grow particles and the mixture is introduced into a mechanical separation tank 4 to be separated into excessive sludge 5 and a separated liquid 6." Yasuda, Abstract, lines 10-15. In other words, Yasuda discloses a method for treating wastewater that begins with a coagulation/flocculation step followed by settling or flotation. Yasuda further teaches, "Next, the separated liquid 6 and flocculent 7 are mixed in a chemical mixing tank 8 to perform flocculation reaction." Yasuda, Abstract, lines 15-17. This is the second recited coagulation/flocculation step. Yasuda then discloses that the separated liquid from tank 8 is "introduced into an ultrafiltration membrane separation tank 9." Yasuda, Abstract, lines 18-19.

10. Yasuda discloses the claimed invention except for the specific concentrations of coagulation agents recited, based on zeta potential. Langlais teaches this in the context of "membrane filtration of especially water, containing suspended matter for the purpose of reducing or preventing the membranes from clogging and of improving the filtration capacity of the latter." Langlais, col. 1, lines 5-9. Specifically, Langlais discloses, "It is known that filtration (micro-, ultra-, nano- or hyperfiltration) membranes are sensitive to clogging by various types of substances: dissolved substances, such as organic materials, substances in the colloidal state, such as metal hydroxides, or, in general, substances in suspension (suspended matter or SM)." Langlais further teaches, "It is also known . . . that coagulation makes it easier to remove the suspended and colloidal matter. . . . There are several approaches for characterizing this phenomenon [including] . . . by measuring the zeta potential (ZP) and especially the variation in

the said ZP as a function of the doses of metal salt added, until that dose which makes the ZP zero, and which therefore corresponds to the required level of treatment for obtaining optimum coagulation, is determined. . . . [This] lead[s] to a definition of a coagulant dose called the 'optimum coagulation dose' which, from the experience gained by those skilled in the art, is the dose which allows the best clarification treatment of the water being treated and which, consequently, will ensure the optimum working conditions of the membrane (that is to say the least fouling conditions)." This is applicant's recited first injection of coagulation reagent of 75.0% to 125% of the optimal coagulation dose based on zeta potential.

11. Regarding the second injection of coagulation reagent, Langlais discloses, "The method includes adding a dose of a preselected coagulation reactant to the effluent before the effluent passes over the membrane. The added dose is a fraction of the coagulating reactant dose (X) that would render the zeta potential of the effluent equal to zero. The range of the added dose is X/30-X/80. The suspended matter in the effluent is subjected to the added dose of coagulation reactant for destabilizing the suspended matter." Langlais, Abstract, lines 3-11. In other words, Langlais discloses a second injection of coagulation reagent upstream of the membrane in the recited 0.1 to 25.0% range of the optimal dose cancelling the zeta potential.

12. To recap, Yasuda discloses the claimed invention except for the specific concentrations of coagulation agents recited, based on zeta potential. Langlais teaches these. It would have been obvious to one having ordinary skill in the art at the time the invention was made, in the Yasuda method, to have added specific concentrations of coagulation agents, based on zeta potential, as taught by Langlais, since Langlais states at col. 1, lines 7-9, that such a modification

would be "for the purpose of reducing or preventing the membranes from clogging and of improving the filtration capacity of the latter."

13. In summary, Yasuda, in view of Langlais, discloses or suggests all claim 1 limitations.

14. Claims 2, 6, and 9 recite limitations that Yasuda discloses. Specifically, in Figure 1, Yasuda teaches one or more injection point within each zone [claim 2] and that the two coagulation reagents (flocculent 2 and flocculent 7) are different [claim 6]. In that same Figure, Yasuda discloses that the membrane wash waters (flocculated wash waters 11) are recirculated upstream of the clarification step (mechanical separation tank 4) [claim 9].

15. Claims 3 and 4 recite various concentrations of coagulation reagents that Langlais teaches. It would have been obvious to one having ordinary skill in the art at the time the invention was made, in the Yasuda method, to have added specific concentrations of coagulation agents, based on zeta potential, as taught by Langlais, since Langlais states at col. 1, lines 7-9, that such a modification would be "for the purpose of reducing or preventing the membranes from clogging and of improving the filtration capacity of the latter."

16. In summary, Yasuda, in view of Langlais, discloses or suggests all limitations recited in claims 2-4, 6, and 9.

17. Claim 5 recites a mixture of coagulation reagents are injected in a single zone and claims 7 and 8 recite adjusting the pH to accommodate the different coagulation reagents used. Yasuda discloses the claimed invention except for a mixture of coagulation reagents injected in a single zone and adjusting pH to accommodate the different coagulation reagents used. Krulik et al.

teaches this in Figure 2 for the "removal of arsenic and fluoride from aqueous solutions, such as drinking water or wastewaters." Krulik et al., ¶ 2, lines 2-3. Krulik et al. further teaches, "[T]he pH of the aqueous solution is adjusted to a pH in the range of about 5 to 8 and calcium salts are added to the aqueous solution to promote precipitation of the fluoride ions to form fluoride bearing particles. Next, ferric or aluminum based salts are then added into the aqueous solution. The ferric or aluminum based salts form a metal hydroxide floc or suspension which absorbs both the arsenate ions and the fluoride bearing particles to form an insoluble arsenic and fluoride bearing solids. The pH of the aqueous solution is adjusted as necessary using conventional means . . . In the preferred embodiment, an additional step is added where coagulants and/or flocculants are added to the aqueous solution to aid in the precipitation of the arsenic and fluoride bearing solids." It would have been obvious to one having ordinary skill in the art at the time the invention was made, in the Yasuda method, to have injected a mixture of coagulation reagents in a single zone and to have adjusted pH to accommodate the different coagulation agents used, as taught by Krulik et al. since Krulik et al. states at ¶ 2, lines 2-3 that such a modification would be useful in the purification of "drinking water or wastewaters," particularly in a "method for the removal of arsenic and fluoride."

18. In summary, Yasuda, in view of Langlais, in further view of Krulik et al., discloses or suggests all limitations recited in claims 5, 7, and 8.

Conclusion

19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Denise R. Anderson whose telephone number is (571)270-3166. The examiner can normally be reached on Monday through Thursday, from 8:00 am to 6:00 pm.

20. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Walter D. Griffin can be reached on 571-272-1447. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

21. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DRA

/Walter D. Griffin/
Supervisory Patent Examiner, Art Unit 1797